CLAIMS

We claim:

1. A method of converting digital signals between a first and a second format, the method comprising:

generating coefficients representative of said digital signals;

subjecting said coefficients to quantization;

generating a dither signal; and

adding said dither signal to said coefficients before said quantization to generate a quantized signal.

2. The method of claim 1, wherein subjecting said coefficients to quantization comprises subjecting said coefficients to a uniform quantization.

3. The method of claim 1, further comprising:

subjecting said quantized signal to inverse quantization; and

subtracting said dither signal from said signal subjected to inverse quantization.

4. The method of claim further comprising:

subjecting each said coefficient to a first quantization step in the absence of any said dither signal being added to generate an undithered quantized coefficient; and

checking if said undithered quantized coefficient is equal to zero, such that

when said undithered quantized coefficient is equal to zero, taking said undithered quantization coefficient as said quantized signal, and

when said undithered quantized coefficient is different from zero, adding said dither signal to said coefficient and subjecting said dithered coefficient to a quantization step to generate said quantized signal.

5. The method of claim 1, wherein the spectrum of said dither signal is gaussian, uniform, sinusoidal or triangular.

6. The method of claim 5, wherein said dither signal is generated as a pseudo-random variable having a uniform distribution by subsequently modifying said distribution to at least one distribution of said group.

7. The method claim 1 wherein said dither signal is generated from a plurality of independent pseudo-random variables.

8. The method of claim 1 further comprising subjecting said digital signals to a discrete cosine transform to generate said coefficients to be quantized as discrete cosine transform coefficients.

9. The method of claim 1, wherein said quantization comprises a part of a transcoding process between an input stream of digital signals at a first bitrate and an output stream of digital signals at a second bitrate, said second bitrate of said output stream of digital signals being selectively controlled.

10. The method of claim 9, further comprising conducting a preanalysis process on said input stream including:

quantizing said signals with a given quantization step; and

evaluating the number of bits spent for coding said coefficients, and in that said bitrate of said output data stream is controlled as a function of said preanalysis.

11. The method of claim 10, further comprising controlling said data stream with a proportional-integrative control.

12. The method of claim 10, wherein said input stream comprises a stream of digital video signals including pictures arranged in groups of pictures, and wherein said bitrate control assigns a value of target bits for each single picture of a group of pictures.

13. The method of claim 1, wherein said quantization comprises part of a transcoding process between an input stream of digital signals at a first bitrate and an output bitrate at a second bitrate, said transcoding process including subjecting at least part of said input digital signals to low pass filtering step followed by downsampling.

14. The method of claim 13, wherein said low pass filtering is performed before conducting a preanalysis process.

15. The method of claim 13, further comprising executing a decimation phase.

16. The method of claim 1, wherein said digital signals comprise, in at least one of said first and second formats, MPEG encoded signals.

17. A system for converting digital signals between a first and second format, the system being configured for generating coefficients representative of said digital signals comprising:

at least one quantizer for subjecting said coefficients to quantization;

a source of a dither signal; and

an adder for adding said dither signal to said coefficients before said quantization to generate a quantized signal.

18. The system of claim 17 wherein said quantizer comprises a uniform quantizer.

19. The system of claim 17 further comprising:

an inverse quantizer for subjecting said quantized signal to inverse quantization; and

a subtractor for subtracting said dither signal from said signal subjected to inverse quantization.

20. The system of claim 17 further comprising:

a first quantizer for subjecting each said coefficient to a first quantization step in the absence of any said dither signal being added to generate an undithered quantized coefficient;

a control module for checking if said undithered quantized coefficient is equal to zero;

an output element for taking said undithered quantization coefficient as said quantized signal when said undithered quantized coefficient is equal to zero;

an adder for adding said dither signal to said coefficient when said undithered quantized coefficient is different from zero; and

a second quantizer for subjecting said dithered coefficient to a quantization step to generate said quantized signal for feeding to said output element.

21. The system of claim 17, wherein said source of said dither signal comprises a gaussian, uniform, sinusoidal or triangular signal source.

22. The system of claim 21, wherein said source comprises a source of a pseudo-random variable having a uniform distribution.

23. The system of any of claims 17, wherein said source of dither signal includes a plurality of sources of independent pseudo-random variables.

24. The system of claim 17 further comprising a discrete cosine transform transform module for subjecting said digital signals to a discrete cosine transform to generate said coefficients to be quantized as discrete cosine transform coefficients.

25. The system of claims 17, further comprising means for transcoding an input stream of said digital signals at a first bitrate into an output stream of digital signals at a second bitrate, including a bitrate control block for selectively controlling said second bitrate of said output stream of digital signals.

26. The system of claim 25, further comprising a preanalysis chain for subjecting said input stream to a preanalysis process, said chain including:

a quantizer for quantizing said signals with a given quantization step; and

a bit usage profile module for evaluating the number of bits spent for coding said coefficients,

wherein said bitrate control block is configured for controlling the bitrate of said output data stream as a function of said preanalysis.

27. The system of claim 26, wherein said bitrate control block comprises a proportional-integrative controller.

28. The system of claim 26, for use in connection with an input stream of digital video signals including pictures arranged in groups of pictures, wherein said bitrate control block is configured for assigning said

value of target bits for each single picture of a group of pictures.

29. The system of claim 17, wherein said quantizer for transcoding an input stream of digital signals at a first bitrate into an output bitrate at a second bitrate, including a low pass filter and a downsampling module for subjecting at least part of said input digital signals to lowpass filtering and downsampling.

30. The method of claim 29, wherein said low pass filter is arranged upstream of a preanalysis chain.

31. The system of claim 29, further comprising a decimation module.

32. A computer program product directly loadable in the internal memory of a digital computer and including software code portions for performing, when the product is run on a computer, a method of converting digital signals between a first and a second format, the method comprising:

generating coefficients representative of said digital signals;

subjecting said coefficients to quantization;

generating a dither signal; and

adding said dither signal to said coefficients before said quantization to generate a quantized signal.